

PATENT COOPERATION TREATY

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REC'D 27 FEB 2006



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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference ACH63134WO00	FOR FURTHER ACTION See Form PCT/PEA/416	
International application No. PCT/GB2004/004064	International filing date (<i>day/month/year</i>) 23.09.2004	Priority date (<i>day/month/year</i>) 25.09.2003
International Patent Classification (IPC) or national classification and IPC C09D5/02, C08J5/18		
Applicant DISPERSE LIMITED		
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 5 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p style="margin-left: 20px;">a. <input checked="" type="checkbox"/> <i>sent to the applicant and to the International Bureau</i> a total of 4 sheets, as follows:</p> <p style="margin-left: 40px;"><input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p style="margin-left: 40px;"><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p style="margin-left: 20px;">b. <input type="checkbox"/> <i>(sent to the International Bureau only)</i> a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>		
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the opinion</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>		
Date of submission of the demand 14.03.2005	Date of completion of this report 28.02.2006	
Name and mailing address of the international preliminary examining authority:  European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016	Authorized Officer Hallemeesch, A Telephone No. +31 70 340-2431 <div style="text-align: right;">  </div>	

**INTERNATIONAL PRELIMINARY REPORT
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International application No.
PCT/GB2004/004064

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4)
 - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

Description, Pages

1-24 as originally filed

Claims, Numbers

1-24 received on 14.03.2005 with letter of 11.03.2005

Drawings, Sheets

1/1 as originally filed

☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
 - ☐ any table(s) related to sequence listing (*specify*):
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
 - ☐ any table(s) related to sequence listing (*specify*):

* If item 4 applies, some or all of these sheets may be marked "superseded."

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international application No.
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Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-16,24
	No: Claims	17-23
Inventive step (IS)	Yes: Claims	1-16,24
	No: Claims	17-23
Industrial applicability (IA)	Yes: Claims	1-24
	No: Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

Re Item V.

1). State of the art

The following documents are referred to in this communication :

D1 : EP-0248192A (1987-12-09)

D2 : WO-9905229A (1999-02-04)

Document D1 discloses an oil-in-water-in-oil coating composition comprising (a) an oil continuous phase comprising a solution of an oil soluble resin or drying oil in a water immiscible solvent, (b) an aqueous discontinuous phase comprising an emulsion of a water insoluble resin in an aqueous medium and © a dispersing agent (claim 1). In the continuous oil phase vegetable oil fatty acid modified alkyd resins may be used (page 5, lines 17 - page 6, line 27). The discontinuous phase comprises an oil-in-water emulsion or latex (page 8, lines 23-27).

While vegetable oil fatty acids may comprise unsaturated bonds, there is no evidence that a polymerization step has been carried out. Only drying is mentioned.

D2 discloses a surface coating comprising droplets of a non-polar substance such as biliquid foam or emulsion entrapped within a polymer film (claim 6 and 1). A polymerization step is not mentioned.

2). Art. 33(1)(2)(3) PCT

Having regard to the state of the art cited in both the description and the international search report, the subject-matter of the claims 1-16 is considered to be novel and to be based on an inventive step.

As can be seen from the above, document D2 discloses in combination all the features defined in quite general terms in independent claim 17. Hence the subject-matter of this claim is not new (Article 33(2) PCT).

Reference is made to the PCT Guidelines as in force from March 25, 2004, Chapter 5, § 26.4 and Appendix A5.26 where there is a statement that a product is not rendered novel merely by the fact that it is produced by means of a new process. Consequently, the dependent claims 18-23 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of

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novelty and/or inventive step (Article 33(2) and (3) PCT). See in this respect claims 6-12 of D2.

However, independent claim 25 is considered to be novel and to be based on an inventive step in view of the available state of the art.

CLAIMS

1. A method of coating the surface of a substrate which comprises the steps of:

- 5 i) contacting the surface with a polymerisable mixture comprising one or more polymerisable components and containing suspended droplets of a biliquid foam or of a high internal oil phase emulsion, the said droplets being
- 10 stabilised by a non-reactive surfactant; and
- ii) polymerising the coating using electron beam, UV radiation, visible radiation, near infra-red, thermal or gamma radiation curing to form a polymer comprising the droplets
- 15 entrapped therein.

2. A method according to claim 1 wherein the coating is polymerised to form a film of the polymer comprising the droplets entrapped therein.

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3. A method as claimed in claim 1 or 2 wherein a biliquid foam is used.

4. A method as claimed in claim 1 or 2 wherein a high

25 internal oil phase emulsion is used which comprises at least 70 percent by weight of the oil phase.

5. A method as claimed in claim 4 wherein the high internal oil phase emulsion comprises at least 90 percent by

30 weight of the oil phase.

6. A method as claimed in any one of the preceding claims wherein the polymerisable mixture comprises from 1 to 50 percent by weight of the biliquid foam or high internal oil phase emulsion.

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7. A method as claimed in claim 6 wherein the polymerisable mixture comprises from 20 to 40 percent by weight of the biliquid foam or high internal oil phase emulsion.

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8. A method as claimed in any one of the preceding claims wherein the external phase of the biliquid foam or high internal oil phase emulsion comprises water or mixture of water with a polar solvent.

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9. A method as claimed in claim 8 wherein the external phase comprises a mixture of water and a C₁₋₄ alcohol or organic oxygenate.

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10. A method as claimed in any one of the preceding claims wherein the coating is polymerised by free-radical polymerisation.

11. A method as claimed in any one of the preceding claims wherein the polymerizable mixture is applied to the surface by printing.

12. A method as claimed in claim 12 wherein the printing is screen-printing, gravure printing, flexographic printing, lithographic printing, ink-jet printing or pad printing.

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13. A method as claimed in any one of claims 1 to 10 wherein the polymerizable mixture is applied to the surface by spray-coating, roller coating, dip coating, or blade, pad or extrusion coating.

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14. A method according to any one of claims 1 to 10 wherein the polymer comprising the droplets entrapped therein is a dental filling.

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15. A method according to any one of claims 1 to 13 wherein the polymer or polymer film comprises droplets comprising a fragrance entrapped therein and is a fragranced coating.

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16. A method according to any one of claims 1 to 13 wherein the surface coating is a security or tamper proof coating comprising a chemically reactive or thermo-chromic or photo-chromic dye.

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17. A surface coating prepared according to any one of the preceding claims which comprises droplets of a biliquid foam or high internal oil phase emulsion entrapped within a polymer or polymer film.

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18. A surface coating as claimed in claim 17 in which the polymer or polymer film is selected so that the oil phase of the biliquid foam or high internal oil phase emulsion is releasable from the coating upon the application of shear force to the polymer or polymer film.

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19. A surface coating as claimed in claim 17 in which the polymer or polymer film is selected so that the oil is

releasable from the coating by the action or a chemical release agent on the polymer.

20. A surface coating as claimed in claim 19 in which
5 the oil is released at a predetermined pH.

21. A surface coating as claimed in claim 19 in which the oil is releasable by contact of the polymer film with water, or other predetermined solvent.

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22. A surface coating as claimed in claim 17 in which the polymer or polymer film is selected so that the oil is releasable from the coating by the application of heat to the polymer.

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23. A surface coating as claimed in any one of claims 17 to 22 in which the polymer or polymer film is partially or wholly crosslinked.

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24. A stand alone polymer or polymer film which is obtained by removing the surface coating as claimed in any one of claims 17 to 23 from the substrate on which it is formed.

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G22013; ACH; RL